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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,502	10/03/2003	Yi-Tsung Cheng	HTCP0013USA	2501

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EXAMINER

BECK, ALEXANDER S

ART UNIT	PAPER NUMBER
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2629

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/605,502	CHENG, YI-TSUNG	
	Examiner	Art Unit	
	Alexander S. Beck	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Acknowledgment is made of the amendment filed by the Applicant on August 1, 2006, in which: Claims 1-4 are amended; new Claims 7-15 are added; and the rejections of the claims are traversed. Claims 1-15 are currently pending in U.S. Application Serial No. 10/605,502, and an Office Action on the merits follows.

Response to Arguments

2. Applicant's arguments with respect to Claims 1-6 have been considered but are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admission of Prior Art (hereinafter AAPA) in view of Schnizlein (U.S. Patent No. 4,414,538, hereinafter SCHNIZLEIN).

As to independent Claims 1 and 7, AAPA teaches/suggests a keyboard (10) in Figure 1 comprising: a key module (12) comprising at least one key cell (SW) with an output end being selectively connected to one of a first voltage (e.g., B₀-B₃) and a second voltage (e.g., B₄-B₇) (AAPA: par. [0004]).

AAPA does not disclose expressly a detect circuit electrically connected to the output end of the key cell for generating a control signal whenever the output end of the key cell becomes to connect to the other of the second voltage and the first voltage; a parallel-to-serial register electrically connected to the output end of the key module; and a processor electrically connected to the parallel-to-serial register and the detect circuit for controlling the parallel-to-serial register according to the control signal.

SCHNIZLEIN, analogous in art with AAPA, teaches/suggests a keyboard in Figure 1 comprising: a detect circuit (60,62) electrically connected to the output end of a key cell (16) for generating a control signal (on line 65) whenever the output end of the key cell becomes to connect to the other of a first state and a second state; a parallel-to-serial register (64) electrically connected to the output end of a key module; and a processor electrically connected to the parallel-to-serial register and the detect circuit for controlling the parallel-to-serial register according to the control signal, wherein a processor is inherently suggested in the parallel-to-serial register (64) for processing decoder (66) output only in response to a signal from the detect circuit (60,62) representative of a key depression (SCHNIZLEIN: col. 4, ln. 6-19).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the teachings of AAPA such that the keyboard included a detect circuit for determining a first state (e.g., first voltage level in AAPA) and a second

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state (e.g., second voltage level in AAPA), parallel-to-serial register and processor, as taught/suggested by SCHNIZLEIN. Thus, AAPA as modified by SCHNIZLEIN teaches/suggests a detect circuit for detecting a state (i.e., voltage) at the moment when the key cell is pressed or released (SCHNIZLEIN: col. 4, ln. 6-19), and therefore inherently detects a transient voltage at that moment because a transient voltage is simply a sudden spike or change in voltage.

The suggestion/motivation for doing so would have been to convert a parallel output signal representing a scanned key module into serial data for transmission to additional processing equipment only in response to a signal from the detect circuit representative of a key depression (SCHNIZLEIN: col. 4, ln. 6-19).

5. Claims 2,3 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admission of Prior Art in view of Schnizlein (U.S. Patent No. 4,414,538) as applied to Claims 1 and 7 above, and further in view of Hackmeister (U.S. Patent No. 4,027,306, hereinafter HACKMEISTER).

As to Claims 2,3,8 and 10, note the above discussion of AAPA and SCHNIZLEIN.

Neither AAPA nor SCHNIZLEIN disclose expressly wherein the detect circuit comprises at least one capacitor corresponding to and electrically connected to the at least one key cell within the key module and an amplifying circuit electrically connected to the capacitor for amplifying the voltage in the capacitor.

However, the use of a capacitive element for storing a voltage and an amplifier to amplify the voltage level is old and well known in the art during the pre-processing steps of

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an electronic device for an improvement in processing. HACKMEISTER, analogous in art with AAPA and SCHNIZLEIN, teaches/suggests a touch-responsive circuit and data input terminal in Figures 1 and 2, comprising: a key module (11) comprising at least one key cell (13') and a detect circuit (12) comprising at least one capacitor (26) corresponding to each key cell within the key module and an amplifying circuit (28) for amplifying the voltage in the capacitor (HACKMEISTER: col. 3, ln. 63 – col. 4, ln. 21).

At the time the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further modify the teachings of AAPA and SCHNIZLEIN such that the detect circuit comprised at least one capacitor corresponding to each key cell within the key module and an amplifying circuit for amplifying the voltage in the capacitor, as taught/suggested by HACKMEISTER.

The suggestion/motivation for doing so would have been to conduct a voltage indicative of a depression of the key cell followed by the sufficient amplification of the conducted voltage by an amplifier to a level applicable for use during processing (HACKMEISTER col. 4, ln. 9-21).

As to Claim 9, SCHNIZLEIN as modified by HACKMEISTER, teaches/suggests wherein the detect circuit (60,62) further comprises a comparator (60) electrically connected to the capacitor for generating the control signal by comparing the first state (e.g., transient voltage) with a reference state (e.g., reference voltage) (SCHNIZLEIN: col. 4, ln. 6-19).

6. Claims 4-6 and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admission of Prior Art, Schnizlein (U.S. Patent No. 4,414,538) and Hackmeister

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(U.S. Patent No. 4,027,306) as applied to Claims 1-3 and 7-10 above, and further in view of Johnson (U.S. Patent No. 6,265,993 B1, hereinafter JOHNSON).

As to Claims 4,5,11 and 12, note the above discussion of AAPA, SCHNIZLEIN and HACKMEISTER. SCHNIZLEIN further teaches/suggests the comparator (60) electrically connected to the amplifying circuit, for comparing whether the state (e.g., voltage) of the output end of the amplifying circuit is in a predetermined range and generating the control signal accordingly (SCHNIZLEIN: col. 4, ln. 6-19).

Neither AAPA, SCHNIZLEIN or HACKMEISTER disclose expressly a positive comparator and a negative comparator for generating the control signal when the voltage output from the output end of the amplifying circuit exceeds a positive reference voltage, and a negative comparator for generating the control signal when the voltage output from the output end of the amplifying circuit is lower than a negative reference voltage.

JOHNSON, analogous in art with the applied references, teaches/suggests a keyboard comprising a pair of detection means (72,74) for allowing the keyboard to separately identify positive and negative key group input signals and thereby distinguish key presses from key releases (JOHNSON: col. 7, ln. 56-65).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further modify the teachings of AAPA, SCHNIZLEIN and HACKMEISTER such that the detect circuit comprised additional means for separately identifying positive and negative key group input signals, as taught/suggested by JOHNSON.

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The suggestion/motivation for doing so would have been to identify positive and negative key group input signals and thereby distinguish key presses from key releases (JOHNSON: col. 7, ln. 56-65).

As to Claims 6 and 14, note the above discussion of AAPA, SCHNIZLEIN and HACKMEISTER.

Neither AAPA, SCHNIZLEIN or HACKMEISTER disclose expressly wherein the detect circuit comprises an OR gate for performing the step of determining whether a control signal is to be output.

However, the Examiner takes Official Notice that the use of an OR gate to perform a simple Boolean expression such as determining whether any of a plurality of inputs are high (e.g., determining which keys are within a predetermined range so as to output a control signal) is old and well known in the art.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further modify the teachings of AAPA, SCHNIZLEIN and HACKMEISTER such that the step of determining whether a control signal is to be output was performed by an OR gate.

The suggestion/motivation for doing so would have been because OR gates are very common in the art, readily available, and cheap to manufacture.

As to Claims 13 and 15, SCHNIZLEIN as modified by HACKMEISTER and JOHNSON teaches/suggests the detect circuit having an amplifier electrically connecting

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the capacitor and the set of comparators for amplifying the transient voltage (HACKMEISTER: col. 3, ln. 63 – col. 4, ln. 21).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander S. Beck whose telephone number is (571) 272-7765. The examiner can normally be reached on M-F, 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

asb
10/13/06


SUMATI LEFKOWITZ
PATENT EXAMINER